

JAPANESE [JP,11-018146,A]

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CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE  
INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

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**CLAIMS**

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[Claim(s)]

[Claim 1] It is the walkie-talkie of the structure where consist of the body section of wireless, and an ID card, and it is equipped with each in a walkie-talkie case as a separate unit. The above-mentioned body section of wireless consists of the wireless sections and the signal-processing sections with the frequency band of a broadband. moreover The above-mentioned ID card consists of ID sections which memorize a user's ID and subscriber information in the memory list which memorizes software, such as CPU and timing control which control said body section of wireless, and a communications protocol. This ID card is a card mold walkie-talkie characterized by the removable thing to a walkie-talkie.

[Claim 2] It is the card mold walkie-talkie of claim 1 which two or more wireless sections are provided in the body section of wireless, and an ID card possesses two or more memory possible [ exchange with other wireless sections by automatic or hand control which the above-mentioned wireless section is an exchangeable unit construction, and are adjunctively provided to a walkie-talkie by changing ] for this wireless section, and is characterized by carrying out this memory as [ be / rewriting of a change and its contents of storage / possible ].

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the walkie-talkie which can be used at any time in the walkie-talkie which realizes signal processing in digital circuits, such as DSP (Digital Signal Processor), without a user being conscious of an environment.

[0002]

[Description of the Prior Art] In recent years, the mobile communications represented by the cellular phone accomplish a rapid growth from the facilities that it can communicate always anywhere, and especially the personal handicap phon (PHS) of personal handy phone has increased the number of subscribers favorably from a low price and handiness. On the other hand in respect of being technical, by development of the latest digital circuit technique The function of the walkie-talkie conventionally constituted centering on the analog circuit DSP (Digital Signal Processor) or FPGA (Field Programmable Gate Array), ASIC (Application Specific IC) etc. — The example realized in a digital circuit is increasing. In the transmitter fields, such as a digital cellular phone \*\* software walkie-talkie (Joe Mitola) The Software Radio Architecture" IEEE Communication Most wireless functions called Magazine, Vol.33, No.5, pp 26-38, and May 1995 The technique realized by software is proposed. The description of this technique is having given flexibility to the function of a walkie-talkie by processing a signal-processing function called the channel separation and the strange recovery which were being conventionally performed in analog by hardware by software after A/D conversion.

[0003] Drawing 4 is the configuration schematic diagram showing an example of the conventional walkie-talkie which realized a part of function of a walkie-talkie by DSP (Digital Signal Processor) in the digital cellular phone etc. As shown in this drawing, the above-mentioned walkie-talkie consists of an antenna 2, the wireless section 41, the signal-processing section 7, the microphone 26, a loudspeaker 27, an actuation display 19, and a control section 45. It changes into RF transmit frequencies in response to the modulating signal from the above-mentioned wireless section 41, a splitter 42, the wireless receive section 44 that does frequency conversion of the RF input signal which received with said antenna 2 and was inputted via this splitter 42 to a specific intermediate frequency, and said signal-processing section 7, and consists of the wireless transmitting sections 43 which send out this RF sending signal from an antenna 2 through said splitter 42. Moreover, the voice codec 14 from which the above-mentioned signal-processing section 7 changes the sound signal from a microphone 26 into a digital sign as a transmitting system circuit, The channel coder 13 which changes the output into the data sequence decided with communication system, It has the wave generation circuit 12 which changes the output of this channel coder 13 into an I signal and a Q signal, the modulator 11 which modulates the output of this wave generation circuit 12, and D/A converter 8 which changes the modulated digital signal into an analog signal, and outputs the signal to the wireless transmitting section 43. Moreover, A/D converter 9 which changes the input signal from the wireless receive section 44 into a digital signal as a circuit of a receiving system, The channel separation machine 18 which band-limits by carrying out baseband signaling conversion of the output signal of this A/D converter 9, The demodulator 17 which restores to the band-limited

signal and is made into an I signal and a Q signal, The waveform shaping circuit 16 changed into the data sequence which digitized the output signal to which it restored and was decided with communication system, It has the voice codec 14 which changes into an analog signal the output of the channel decoder 15 which changes the output into a voice digital signal, and this channel decoder 15, and outputs the signal to a loudspeaker 27. The function of the above-mentioned modulator 11, the wave generation circuit 12, the channel coder 13, the voice codec 14, the channel decoder 15, a waveform shaping circuit 16, a demodulator 17, and the channel separation machine 18 consists of DSPs (Digital Signal Processor)10 so that it can process by software. Next, a control section 45 consists of ID sections 46 which memorized ID and subscriber information of the memory 49 and the user who remembered software, such as a communications protocol corresponding to the timing control 48 and communication system, to be CPUs47 for controlling the signal-processing section 7 in wireless section 41 list.

[0004]

[Problem(s) to be Solved by the Invention] However, while the field radio constituted as mentioned above has the adaptability which can be used by two or more wireless systems by one set of a walkie-talkie by the processing facility of DSP and the user is provided with convenience, since the subscriber who can use one set of a walkie-talkie will be limited with one person, the use range of the walkie-talkie will be restricted. For example, when the subscriber who had joined a certain communication service entrepreneur transfers to other entrepreneurs' service area, it is the problem of accounting of what can fit the walkie-talkie concerned to new communication system according mainly to the difference in an entrepreneur, and the field of systems operation, and the problem that a walkie-talkie must be exchanged occurs. It aims at offering the walkie-talkie which can emit or acquire quickly required information, without being made in order that this invention may solve the above-mentioned technical problem, and catching a user by the specific walkie-talkie.

[0005]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the walkie-talkie concerning invention of claim 1 It is the walkie-talkie of the structure where consist of the body section of wireless, and an ID card, and it is equipped with each in a walkie-talkie case as a separate unit. The above-mentioned body section of wireless consists of the wireless sections and the signal-processing sections with the frequency band of a broadband. moreover The above-mentioned ID card consists of ID sections which memorize a user's ID and subscriber information in the memory list which memorizes software, such as CPU and timing control which control said body section of wireless, and a communications protocol. This ID card is characterized by the removable thing to a walkie-talkie. The walkie-talkie concerning invention of claim 2 is set in the body section of wireless of said walkie-talkie. Provide two or more wireless sections in these body circles of wireless, and this wireless section is depended and changed to automatic or hand control. Or an ID card possesses two or more memory, and it is characterized possible by exchange of having carried out this memory as [ be / rewriting of a change and its contents of storage / possible ] with other wireless sections which are exchangeable unit constructions and are adjunctively provided to a walkie-talkie by the above-mentioned wireless section.

[0006]

[Embodiment of the Invention] Hereafter, this invention is explained to a detail based on the gestalt of operation shown in the drawing. Drawing 1 is the decomposition perspective view showing the example of 1 gestalt of operation of the structure of the walkie-talkie concerning this invention, and drawing 2 is the configuration schematic diagram showing the internal configuration of the walkie-talkie of drawing 1 . As shown in drawing 1 , the walkie-talkie of this example consists of the body section 1 of wireless, an antenna 2, the actuation display 19, a microphone 26, a loudspeaker 27, and ID card 20. Among the above-mentioned configurations, the walkie-talkie case 29 is equipped with an antenna 2, the actuation display 19, and a loudspeaker 27 fixed, and the interior of the body section 1 of wireless is carried out into the walkie-talkie case 29. Moreover, the ID card section 30 which served as covering of the walkie-talkie case 29 is equipped with ID card 20 and a microphone 26. Above-mentioned ID card 20 is

formed in a card mold removable to terminal equipments, such as a field radio, and is connected with each configuration block of a walkie-talkie by inserting and equipping from the outside the connector 28 installed in the connection of the walkie-talkie case 29 and the ID card section 30. [0007] Drawing 2 is the configuration schematic diagram showing the internal configuration of the walkie-talkie shown in drawing 1. In this drawing, although the body section 1 of wireless consists of the wireless section 3 and the signal-processing section 7, since the internal configuration and each function of this wireless section 3 and the signal-processing section 7 are the same as that of the conventional walkie-talkie, they omit explanation except for the frequency band being broadband-ized. ID card 20 consists of cells 25 which supply electric power to ID of the memory 24 and the user who memorized software, such as a communications protocol corresponding to CPU22 for controlling the body section 1 of wireless, the timing control 23, and communication system, the ID section 21 which memorized subscriber information, CPU, etc. It is inserting above-mentioned ID card 20 in the ID card section 30, and connecting with a connector 28, when a user's communicates using the above-mentioned walkie-talkie. The individual data of the software corresponding to communication system required for a communication link and a subscriber download from ID card 20 to said body section 1 of wireless. The body section 1 of wireless is controlled by this, and the walkie-talkie corresponding to the radio communications system made into the purpose can be constituted. Therefore, if it is the walkie-talkie of the same configuration, other walkie-talkies can be used by connecting its own ID card. On the contrary, it is also possible to use its own walkie-talkie using the ID card of other walkie-talkies.

[0008] Drawing 3 is the configuration schematic diagram showing the configuration of the walkie-talkie in which other examples are shown concerning this invention. Although the configuration of the above-mentioned walkie-talkie is fundamentally [ as the above-mentioned walkie-talkie ] the same As shown in this drawing, two or more wireless [ section / 1 / of wireless / body ] section (this example wireless sections A31 and B32), the switcher A which changes this wireless section — it has 35 and 35, and ID card 20 is equipped with the switcher B36 which changes two or more memory (this example memory A33 and B34) and these memory, and rewriting of the contents of storage is possible for this memory by a card writer etc. Moreover, although not illustrated, making the above-mentioned wireless section into the wireless section with which the walkie-talkie was equipped as an accessory, and exchangeable structure is also considered as one of the examples of other. In the walkie-talkie of the above-mentioned configuration, when the user of a walkie-talkie moves to the service area of the radio communications system with which radio system, such as for example, a CDMA method and a TDMA method, differs from a frequency band, this walkie-talkie changes to the wireless section corresponding to the system with the instruction from memory, or exchanges for the wireless section corresponding to the system of this \*\* and becomes usable continuously with hand control. Furthermore, in order [ in other radio communications systems ] to use it, it becomes usable by changing the memory of ID card 20 by the key stroke of the actuation display 19. Moreover, with a card writer etc., since rewriting of the contents of storage is possible for this memory, the correspondence of it to a still broader radio communications system is attained.

[0009]

[Effect of the Invention] Although only one subscriber to whom ID was given was able to use one set of a walkie-talkie conventionally by constituting a walkie-talkie as mentioned above, if it is the walkie-talkie of the above-mentioned ID card system, it is possible for the possessor of one ID card to receive service of two or more wireless systems possible [ use of two or more walkie-talkies ]. Furthermore, it becomes communication system with the flexibility which does not ask wireless and a cable by connecting this ID card to the communication system of the cable system of the same method as this invention usable. As explained above, the walkie-talkie concerning this invention has remarkable effectiveness, without catching a user by the specific walkie-talkie compared with the conventional method, when offering the walkie-talkie which is the need and which can communicate by the way.

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**TECHNICAL FIELD**

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[Field of the Invention] This invention relates to the walkie-talkie which can be used at any time in the walkie-talkie which realizes signal processing in digital circuits, such as DSP (Digital Signal Processor), without a user being conscious of an environment.

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PRIOR ART

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[Description of the Prior Art] In recent years, the mobile communications represented by the cellular phone accomplish a rapid growth from the facilities that it can communicate always anywhere, and especially the personal handicap phon (PHS) of personal handy phone has increased the number of subscribers favorably from a low price and handiness. On the other hand in respect of being technical, by development of the latest digital circuit technique The function of the walkie-talkie conventionally constituted centering on the analog circuit DSP (Digital Signal Processor) or FPGA (Field Programmable Gate Array), ASIC (Application Specific IC) etc. -- The example realized in a digital circuit is increasing. In the transmitter fields, such as a digital cellular phone \*\* software walkie-talkie (Joe Mitola) "The Software Radio Architecture" IEEE Communication Magazine, Vol.33, No.5, pp 26-38, and May 1995 The technique realized by software is proposed. The description of this technique is having given flexibility to the function of a walkie-talkie by processing a signal-processing function called the channel separation and the strange recovery which were being conventionally performed in analog by hardware by software after A/D conversion.

[0003] Drawing 4 is the configuration schematic diagram showing an example of the conventional walkie-talkie which realized a part of function of a walkie-talkie by DSP (Digital Signal Processor) in the digital cellular phone etc. As shown in this drawing, the above-mentioned walkie-talkie consists of an antenna 2, the wireless section 41, the signal-processing section 7, the microphone 26, a loudspeaker 27, an actuation display 19, and a control section 45. It changes into RF transmit frequencies in response to the modulating signal from the above-mentioned wireless section 41, a splitter 42, the wireless receive section 44 that does frequency conversion of the RF input signal which received with said antenna 2 and was inputted via this splitter 42 to a specific intermediate frequency, and said signal-processing section 7, and consists of the wireless transmitting sections 43 which send out this RF sending signal from an antenna 2 through said splitter 42. Moreover, the voice codec 14 from which the above-mentioned signal-processing section 7 changes the sound signal from a microphone 26 into a digital sign as a transmitting system circuit, The channel coder 13 which changes the output into the data sequence decided with communication system, It has the wave generation circuit 12 which changes the output of this channel coder 13 into an I signal and a Q signal, the modulator 11 which modulates the output of this wave generation circuit 12, and D/A converter 8 which changes the modulated digital signal into an analog signal, and outputs the signal to the wireless transmitting section 43. Moreover, A/D converter 9 which changes the input signal from the wireless receive section 44 into a digital signal as a circuit of a receiving system, The channel separation machine 18 which band-limits by carrying out baseband signaling conversion of the output signal of this A/D converter 9, The demodulator 17 which restores to the band-limited signal and is made into an I signal and a Q signal, The waveform shaping circuit 16 changed into the data sequence which digitized the output signal to which it restored and was decided with communication system, It has the voice codec 14 which changes into an analog signal the output of the channel decoder 15 which changes the output into a voice digital signal, and this channel decoder 15, and outputs the signal to a loudspeaker 27. The function of the above-mentioned modulator 11, the wave generation circuit 12, the channel coder 13, the voice codec 14, the



channel decoder 15, a waveform shaping circuit 16, a demodulator 17, and the channel separation machine 18 consists of DSPs (Digital Signal Processor)10 so that it can process by software. Next, a control section 45 consists of ID sections 46 which memorized ID and subscriber information of the memory 49 and the user who remembered software, such as a communications protocol corresponding to the timing control 48 and communication system, to be CPUs47 for controlling the signal-processing section 7 in wireless section 41 list.

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] Although only one subscriber to whom ID was given was able to use one set of a walkie-talkie conventionally by constituting a walkie-talkie as mentioned above, if it is the walkie-talkie of the above-mentioned ID card system, it is possible for the possessor of one ID card to receive service of two or more wireless systems possible [ use of two or more walkie-talkies ]. Furthermore, it becomes communication system with the flexibility which does not ask wireless and a cable by connecting this ID card to the communication system of the cable system of the same method as this invention usable. As explained above, the walkie-talkie concerning this invention has remarkable effectiveness, without catching a user by the specific walkie-talkie compared with the conventional method, when offering the walkie-talkie which is the need and which can communicate by the way.

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] However, while the field radio constituted as mentioned above has the adaptability which can be used by two or more wireless systems by one set of a walkie-talkie by the processing facility of DSP and the user is provided with convenience, since the subscriber who can use one set of a walkie-talkie will be limited with one person, the use range of the walkie-talkie will be restricted. For example, when the subscriber who had joined a certain communication service entrepreneur transfers to other entrepreneurs' service area, it is the problem of accounting of what can fit the walkie-talkie concerned to new communication system according mainly to the difference in an entrepreneur, and the field of systems operation, and the problem that a walkie-talkie must be exchanged occurs. It aims at offering the walkie-talkie which can emit or acquire quickly required information, without being made in order that this invention may solve the above-mentioned technical problem, and catching a user by the specific walkie-talkie.

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MEANS

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[Means for Solving the Problem] In order to solve the above-mentioned technical problem, the walkie-talkie concerning invention of claim 1 It is the walkie-talkie of the structure where consist of the body section of wireless, and an ID card, and it is equipped with each in a walkie-talkie case as a separate unit. The above-mentioned body section of wireless consists of the wireless sections and the signal-processing sections with the frequency band of a broadband. moreover The above-mentioned ID card consists of ID sections which memorize a user's ID and subscriber information in the memory list which memorizes software, such as CPU and timing control which control said body section of wireless, and a communications protocol. This ID card is characterized by the removable thing to a walkie-talkie. The walkie-talkie concerning invention of claim 2 is set in the body section of wireless of said walkie-talkie. Provide two or more wireless sections in these body circles of wireless, and this wireless section is depended and changed to automatic or hand control. Or an ID card possesses two or more memory, and it is characterized possible by exchange of having carried out this memory as [ be / rewriting of a change and its contents of storage / possible ] with other wireless sections which are exchangeable unit constructions and are adjunctively provided to a walkie-talkie by the above-mentioned wireless section.

[0006]

[Embodiment of the Invention] Hereafter, this invention is explained to a detail based on the gestalt of operation shown in the drawing. Drawing 1 is the decomposition perspective view showing the example of 1 gestalt of operation of the structure of the walkie-talkie concerning this invention, and drawing 2 is the configuration schematic diagram showing the internal configuration of the walkie-talkie of drawing 1 . As shown in drawing 1 , the walkie-talkie of this example consists of the body section 1 of wireless, an antenna 2, the actuation display 19, a microphone 26, a loudspeaker 27, and ID card 20. Among the above-mentioned configurations, the walkie-talkie case 29 is equipped with an antenna 2, the actuation display 19, and a loudspeaker 27 fixed, and the interior of the body section 1 of wireless is carried out into the walkie-talkie case 29. Moreover, the ID card section 30 which served as covering of the walkie-talkie case 29 is equipped with ID card 20 and a microphone 26. Above-mentioned ID card 20 is formed in a card mold removable to terminal equipments, such as a field radio, and is connected with each configuration block of a walkie-talkie by inserting and equipping from the outside the connector 28 installed in the connection of the walkie-talkie case 29 and the ID card section 30.

[0007] Drawing 2 is the configuration schematic diagram showing the internal configuration of the walkie-talkie shown in drawing 1 . In this drawing, although the body section 1 of wireless consists of the wireless section 3 and the signal-processing section 7, since the internal configuration and each function of this wireless section 3 and the signal-processing section 7 are the same as that of the conventional walkie-talkie, they omit explanation except for the frequency band being broadband-ized. ID card 20 consists of cells 25 which supply electric power to ID of the memory 24 and the user who memorized software, such as a communications protocol corresponding to CPU22 for controlling the body section 1 of wireless, the timing control 23, and communication system, the ID section 21 which memorized subscriber information, CPU, etc. It is inserting above-mentioned ID card 20 in the ID card section 30, and

connecting with a connector 28, when a user's communicates using the above-mentioned walkie-talkie, The individual data of the software corresponding to communication system required for a communication link and a subscriber download from ID card 20 to said body section 1 of wireless. The body section 1 of wireless is controlled by this, and the walkie-talkie corresponding to the radio communications system made into the purpose can be constituted. Therefore, if it is the walkie-talkie of the same configuration, other walkie-talkies can be used by connecting its own ID card. On the contrary, it is also possible to use its own walkie-talkie using the ID card of other walkie-talkies.

[0008] Drawing 3 is the configuration schematic diagram showing the configuration of the walkie-talkie in which other examples are shown concerning this invention. Although the configuration of the above-mentioned walkie-talkie is fundamentally [ as the above-mentioned walkie-talkie ] the same As shown in this drawing, two or more wireless [ section / 1 / of wireless / body ] section (this example wireless sections A31 and B32), the switcher A which changes this wireless section — it has 35 and 35, and ID card 20 is equipped with the switcher B36 which changes two or more memory (this example memory A33 and B34) and these memory, and rewriting of the contents of storage is possible for this memory by a card writer etc. Moreover, although not illustrated, making the above-mentioned wireless section into the wireless section with which the walkie-talkie was equipped as an accessory, and exchangeable structure is also considered as one of the examples of other. In the walkie-talkie of the above-mentioned configuration, when the user of a walkie-talkie moves to the service area of the radio communications system with which radio system, such as for example, a CDMA method and a TDMA method, differs from a frequency band, this walkie-talkie changes to the wireless section corresponding to the system with the instruction from memory, or exchanges for the wireless section corresponding to the system of this \*\* and becomes usable continuously with hand control. Furthermore, in order [ in other radio communications systems ] to use it, it becomes usable by changing the memory of ID card 20 by the key stroke of the actuation display 19. Moreover, with a card writer etc., since rewriting of the contents of storage is possible for this memory, the correspondence of it to a still broader radio communications system is attained.

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## DESCRIPTION OF DRAWINGS

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### [Brief Description of the Drawings]

[Drawing 1] The decomposition perspective view showing the example of 1 gestalt of operation of the structure concerning this invention

[Drawing 2] The configuration schematic diagram showing the internal configuration of the walkie-talkie of drawing 1

[Drawing 3] The configuration schematic diagram showing the configuration of other examples of the walkie-talkie concerning this invention

[Drawing 4] The configuration schematic diagram showing an example of the configuration of the conventional walkie-talkie

### [Description of Notations]

1 .. Body section of wireless 2 .. Antenna 3 .. The wireless section concerning this invention, 4 .. Splitter 5 .. Wireless transmitting section 6 .. Wireless receive section 7 .. Signal-processing section, 8 .. D/A converter 9 .. An A/D converter and 10 .. DSP, 11 .. Modulator 12 wave generation circuit 13 .. Channel coder, 14 .. Voice codec 15 .. A channel decoder, 16 .. Waveform shaping circuit, 17 .. Demodulator 18 .. A channel separation machine, 19 .. Actuation display, 20 .. ID card concerning this invention 21 .. The ID section and 22 .. CPU, 23 .. Timing control, 24- - memory 25 .. Cell, 26 .. Microphone 27 [ .. Walkie-talkie case, ] .. A loudspeaker, 28 .. A connector, 29 [ .. Wireless section B ] 30 .. The ID card section, 31 .. The wireless section A and 32 [ 35 .. Switcher A ] 33 .. Memory A, 34 .. Memory B 36 .. Switcher B 41 .. The conventional wireless section 42 .. Splitter 43 .. Wireless transmitting section 44 [ 46 .. The ID section 47 / 49 .. Memory / .. CPU, 48 .. Timing control ] .. A wireless receive section, 45 .. Control section

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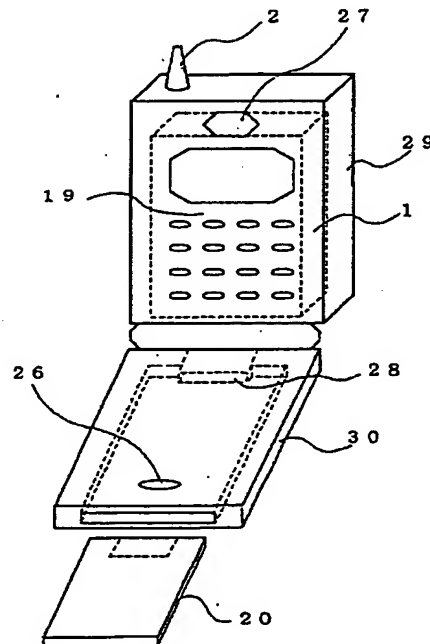
東洋通信機株式会社内

(54) 【発明の名称】 カード型無線機

## (57) 【要約】

【課題】一人の加入者が、複数の無線機を、システムの異なる通信サービスエリアで、環境を意識することなく随時使用できる無線機を提供する。

【解決手段】無線部と信号処理部で構成されるデジタル無線機の無線本体部を、この無線本体部を制御するCPUとタイミングコントロールと通信プロトコル等のソフトウェアを記憶するメモリ並びにユーザのIDや加入者情報を記憶するID部で構成される着脱可能なIDカードで制御する。



## 【特許請求の範囲】

【請求項 1】無線本体部と ID カードで構成され、それぞれが別個のユニットとして無線機ケース内に装着される構造の無線機であって、上記無線本体部は広帯域の周波数帯域をもつ無線部と信号処理部で構成され、また、

上記 ID カードは前記無線本体部を制御する CPU とタイミングコントロールと通信プロトコル等のソフトウェアを記憶するメモリ並びにユーザの ID や加入者情報を記憶する ID 部で構成され、該 ID カードは無線機に対し着脱可能であることを特徴とするカード型無線機。

【請求項 2】無線本体部に複数の無線部を具備し、該無線部は自動または手動による切り替え、あるいは上記無線部は交換可能なユニット構造であって無線機に対し付属的に具備した他の無線部との交換が可能であり、また、ID カードは複数のメモリを具備し、該メモリは切り替え及びその記憶内容の書き換えが可能であるようにしたことを特徴とする請求項 1 のカード型無線機。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】本発明は、信号処理を DSP (Digital Signal Processor) 等のデジタル回路で実現する無線機において、ユーザが環境を意識することなく随時使用できる無線機に関する。

## 【0002】

【従来の技術】近年、携帯電話に代表される移動体通信は、いつでも、どこでも通信できるという便利さから急成長を遂げ、特に簡易型携帯電話のパーソナルハンディフォン (PHS) は、低価格と手軽さから順調に加入者数を増やしている。一方、技術的な面では、最近のデジタル回路技術の発達により、従来アナログ回路中心に構成されていた無線機の機能を DSP (Digital Signal Processor) あるいは FPGA (Field Programmable Gate Array)、ASIC (Application Specific IC) 等のデジタル回路で実現する例が増えてきており、デジタル携帯電話等の通信機分野においてもソフトウェア無線機 (Joe Mitola, The Software Radio Architecture", IEEE Communication Magazine, Vol. 33, No. 5, pp26-38, May 1995) と呼ばれる無線機能のほとんどをソフトウェアで実現する技術が提案されている。この技術の特徴は、従来ハードウェアでアナログ的に行っていたチャンネル分離や変復調といった信号処理機能を、A/D 変換後にソフトウェアで処理することにより、無線機の機能に柔軟性を持たせたことである。

【0003】図 4 は、デジタル携帯電話等において無線機の機能の一部を DSP (Digital Signal Processor) で実現した、従来の無線機の一例を示す構成概要図である。同図に示すように、上記の無線機は、アンテナ 2、無線部 41、信号処理部 7、マイク 26、スピーカ 27、操作表示部 19 及び制御部 45 で構成されている。上記無線部 41、分波器 42 と、前記アンテナ 2 で

受信し該分波器 42 を経由して入力した高周波受信信号を特定の中間周波数に周波数変換する無線受信部 44

と、前記信号処理部 7 からの変調信号を受けて高周波送信周波数に変換し、前記分波器 42 を介して該高周波送信信号をアンテナ 2 より送出する無線送信部 43 より構成される。また、上記信号処理部 7 は、送信系回路として、マイク 26 からの音声信号をデジタル符号に変換する音声コーデック 14 と、その出力を通信システムで決められたデータ系列に変換するチャンネルコーダ 13 と、該チャンネルコーダ 13 の出力を I 信号、Q 信号に変換する波形生成回路 12 と、該波形生成回路 12 の出力を変調する変調器 11 と、変調されたデジタル信号をアナログ信号に変換しその信号を無線送信部 43 に出力する D/A 変換器 8 を有する。また、受信系の回路として、無線受信部 44 からの受信信号をデジタル信号に変換する A/D 変換器 9 と、該 A/D 変換器 9 の出力信号をベースバンド信号変換して帯域制限を行うチャンネル分離器 18 と、帯域制限された信号を復調して I 信号、Q 信号にする復調器 17 と、復調された出力信号をデジタル化し通信システムで決められたデータ系列に変換する波形整形回路 16 と、その出力を音声デジタル信号に変換するチャンネルデコーダ 15 と、該チャンネルデコーダ 15 の出力をアナログ信号に変換しその信号をスピーカ 27 に出力する音声コーデック 14 を有する。上記の変調器 11、波形生成回路 12、チャンネルコーダ 13、音声コーデック 14、チャンネルデコーダ 15、波形整形回路 16、復調器 17 及びチャンネル分離器 18 の機能は、ソフトウェアで処理できるように DSP (Digital Signal Processor) 10 で構成されている。次に、制御部 45 は無線部 41 並びに信号処理部 7 を制御するための CPU 47 と、タイミングコントロール 48 と通信システムに対応した通信プロトコル等のソフトウェアを記憶したメモリ 49 と使用者の ID や加入者情報を記憶した ID 部 46 で構成される。

## 【0004】

【発明が解決しようとする課題】しかしながら、上述のように構成した携帯無線機は、DSP の処理機能によって一台の無線機で複数の無線システムで使用できる柔軟さをもち、使用者に利便性を提供している反面、一台の無線機を使用できる加入者は一人と限定されてしまうためその無線機の使用範囲は制限されてしまう。例えば、ある通信サービス事業者に参加していた加入者が他の事業者のサービスエリアに移転した場合、当該無線機を新しい通信システムに適応させることはできるものの、主として事業者の違いによる課金の問題やシステム運用の面で、無線機を取り替えなければならないという問題が発生する。本発明は上記課題を解決するためになされたものであって、使用者が特定の無線機にとらわれることなく、迅速に必要な情報を発しあるいは取得することが可能な無線機を提供することを目的とする。



【0005】

【課題を解決するための手段】上記課題を解決するため、請求項1の発明に係わる無線機は、無線本体部とIDカードで構成され、それぞれが別個のユニットとして無線機ケース内に装着される構造の無線機であって、上記無線本体部は広帯域の周波数帯域をもつ無線部と信号処理部で構成され、また、上記IDカードは前記無線本体部を制御するCPUとタイミングコントロールと通信プロトコル等のソフトウェアを記憶するメモリ並びにユーザのIDや加入者情報を記憶するID部で構成され、該IDカードは無線機に対し着脱可能であることを特徴とする。請求項2の発明に係わる無線機は、前記無線機の無線本体部において、該無線本体部内に複数の無線部を具備し、該無線部は自動または手動による切り替え、あるいは上記無線部は交換可能なユニット構造であって無線機に対し付属的に具備した他の無線部との交換が可能であり、また、IDカードは複数のメモリを具備し、該メモリは切り替え及びその記憶内容の書き換えが可能であるようにしたことを特徴とする。

【0006】

【発明の実施の形態】以下、本発明を図面に示した実施の形態に基づいて詳細に説明する。図1は、本発明に係わる無線機の構造の実施の一形態例を示す分解斜視図であり、また、図2は、図1の無線機の内部構成を示す構成概要図である。図1に示すように、本実施例の無線機は、無線本体部1、アンテナ2、操作表示部19、マイク26、スピーカ27、及びIDカード20とで構成される。上記構成のうち、アンテナ2、操作表示部19、及びスピーカ27は、無線機ケース29に固定的に装着され、無線本体部1は無線機ケース29内に内装される。また、IDカード20とマイク26は、無線機ケース29のカバーを兼ねたIDカード部30に装着される。上記IDカード20は、携帯無線機等の端末機器に着脱可能なカード型に形成され、無線機ケース29とIDカード部30の接続部に設置されたコネクタ28に、外部から挿入して装着することによって無線機の各構成ブロックと接続される。

【0007】図2は、図1に示す無線機の内部構成を示す構成概要図である。同図において、無線本体部1は無線部3と信号処理部7とで構成されているが、該無線部3及び信号処理部7の内部構成とそれぞれの機能は、周波数帯域が広帯域化されていることを除いて従来の無線機と同一であるので説明を省略する。IDカード20は無線本体部1を制御するためのCPU22とタイミングコントロール23と通信システムに対応した通信プロトコル等のソフトウェアを記憶したメモリ24と使用者のIDや加入者情報を記憶したID部21とCPU等に給電する電池25とで構成される。使用者が上記の無線機を使用して通信を行う場合は、上記IDカード20をIDカード部30に挿入してコネクタ28に接続することに

より、IDカード20から前記無線本体部1に対し、通信に必要な通信システムに対応したソフトウェアと加入者の個別データがダウンロードされる。これによって無線本体部1が制御され、目的とする無線通信システムに対応した無線機を構成することができる。従って、同様の構成の無線機であれば、自分のIDカードを接続することによって他の無線機を使用することができる。逆に、他の無線機のIDカードを用いて自分の無線機を使用することも可能である。

10 【0008】図3は、本発明に係わる、他の実施例を示す無線機の構成を示す構成概要図である。上記無線機の構成は前述の無線機と基本的には同じであるが、同図に示すように、無線本体部1には複数の無線部（本実施例では無線部A31及びB32）と、該無線部を切り替える切替器A35、35を備えており、また、IDカード20には複数のメモリ（本実施例ではメモリA33及びB34）と該メモリを切り替える切替器B36を備えており、該メモリはカードライタ等によって記憶内容の書き換えが可能である。また、図示していないが、上記の無線部は、無線機に付属品として備えられた無線部と交換可能な構造にすることも他の実施例の一つとして考えられる。上記の構成の無線機において、無線機の利用者が、例えばCDMA方式やTDMA方式等の無線方式、あるいは周波数バンドが異なる無線通信システムのサービスエリアに移動した場合には、該無線機はメモリからの命令でそのシステムに対応した無線部に切り替わり、あるいは、手動によって当該のシステムに対応する無線部に交換して、継続して使用が可能となる。更に他の無線通信システムでの使用するためには、操作表示部19

20 30 のキー操作でIDカード20のメモリを切り替えることによって、使用が可能となる。また、該メモリはカードライタ等によって記憶内容の書き換えが可能であるので、さらに幅広い無線通信システムへの対応が可能となる。

【0009】

【発明の効果】上述のように無線機を構成することによって、従来、1台の無線機はIDが付与された1加入者のみ使用が可能であったが、上記のIDカード方式の無線機であれば1個のIDカードの所持者は複数の無線機の使用が可能であり、また、複数の無線システムのサービスを受けることが可能である。更に、該IDカードを本発明と同一の方式の有線系の通信システムに接続することで無線・有線を問わない柔軟性のある通信システムに使用が可能となる。以上説明したように、本発明に係わる無線機は、従来方式に比べ使用者は特定の無線機にとらわれることなく、必要なときに通信することができる無線機を提供する上で著しい効果がある。

【図面の簡単な説明】

【図1】本発明に係わる構造の実施の一形態例を示す分解斜視図

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【図2】図1の無線機の内部構成を示す構成概要図

【図3】本発明に係わる無線機の他の実施例の構成を示す構成概要図

【図4】従来の無線機の構成の一例を示す構成概要図

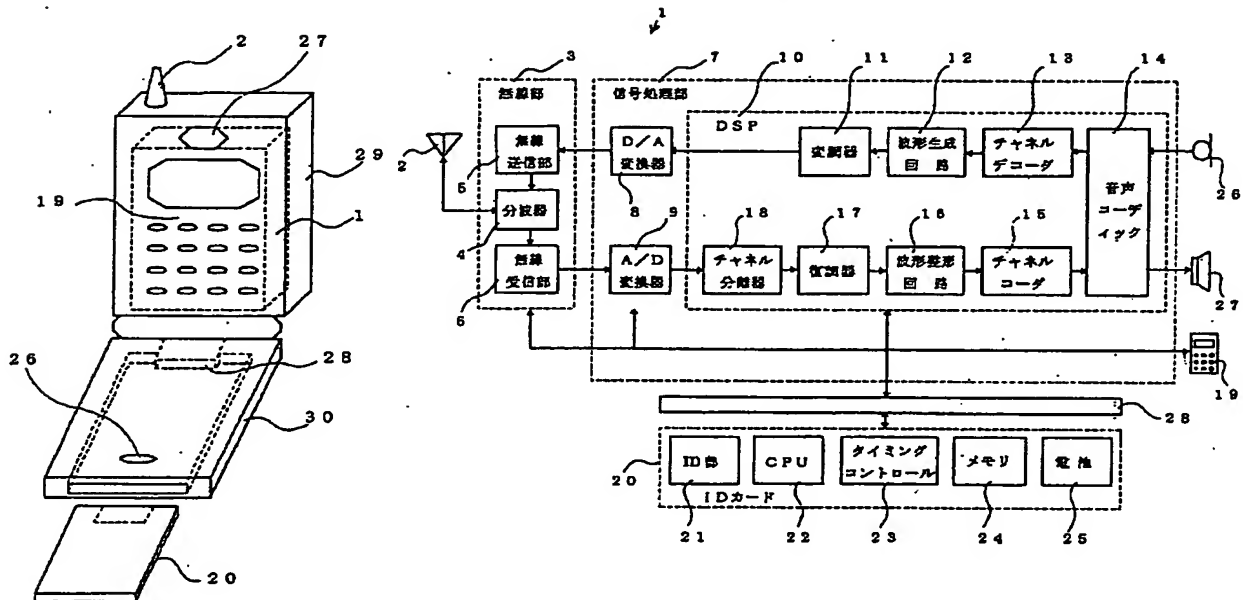
【符号の説明】

1・・・無線本体部、2・・・アンテナ、3・・・本発明に係わる無線部、4・・・分波器、5・・・無線送信部、6・・・無線受信部、7・・・信号処理部、8・・・D/A変換器、9・・・A/D変換器、10・・・DSP、11・・・変調器、12・・・波形生成回路、13・・・チャンネルコーダ、14・・・音声コーディック、15・・・チャンネルデコーダ、16・・・波形整形回路、17・・・復調器、18・・・チャンネル分離器、19・・・操作

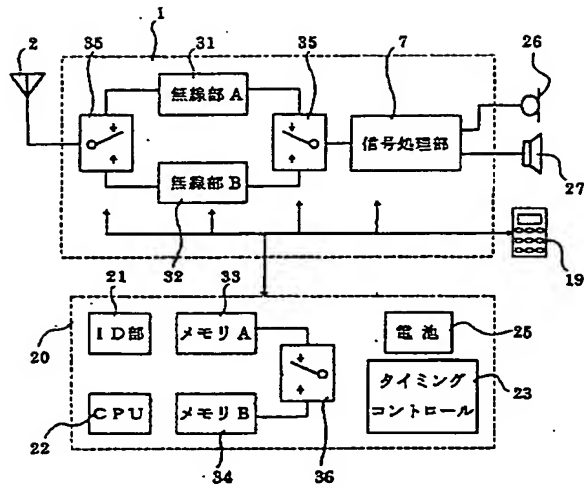
\* 作表示部、20・・・本発明に係わるIDカード、21・・・ID部、22・・・CPU、23・・・タイミングコントロール、24・・・メモリ、25・・・電池、26・・・マイク、27・・・スピーカ、28・・・コネクタ、29・・・無線機ケース、30・・・IDカード部、31・・・無線部A、32・・・無線部B、33・・・メモリA、34・・・メモリB、35・・・切替器A、36・・・切替器B、41・・・従来の無線部、42・・・分波器、43・・・無線送信部、44・・・無線受信部、45・・・制御部、46・・・ID部、47・・・CPU、48・・・タイミングコントロール、49・・・メモリ

【図1】

【図2】



【図3】



【図4】

